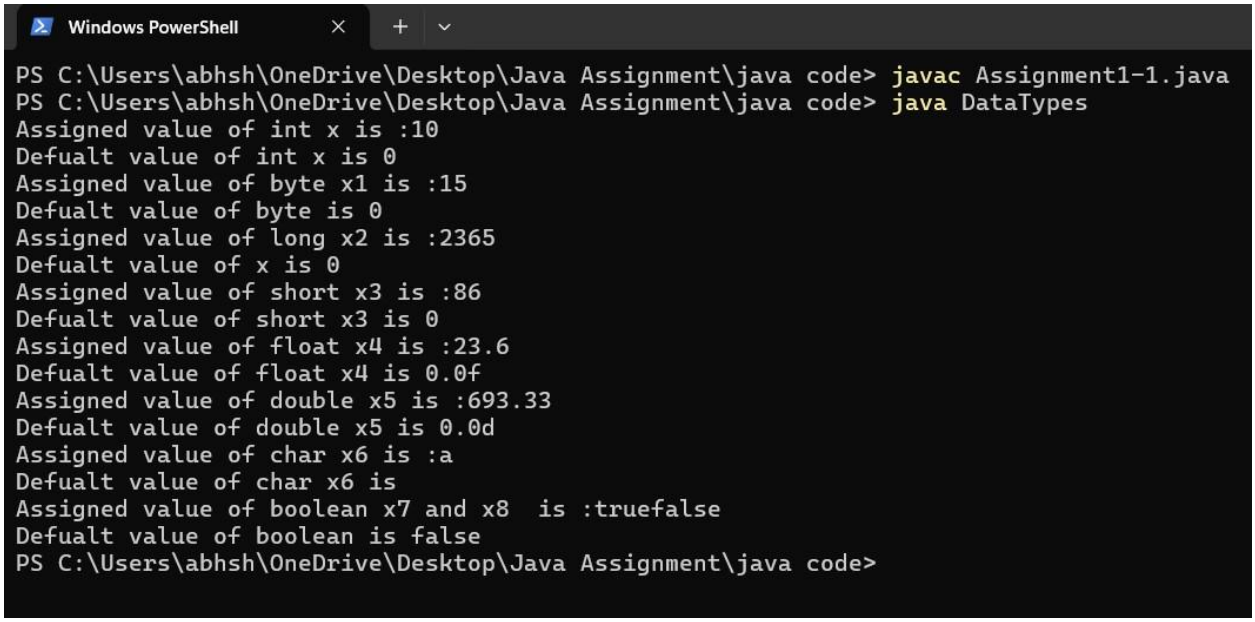
1. Create a program that declares and initializes all primitive data types in Java and prints their default and assigned values.

Code=

```
class DataTypes{
        public static void main(String args[])
        {
                int x=10;
                System.out.println("Assigned value of int x is :"+ x);
                System.out.println("Defualt value of int x is 0");

                byte x1=15;
                System.out.println("Assigned value of byte x1 is :"+ x1);
                System.out.println("Defualt value of byte is 0");

                long x2=2365;
                System.out.println("Assigned value of long x2 is :"+ x2);
                System.out.println("Defualt value of x is 0");

                Short x3=0x56;
                System.out.println("Assigned value of short x3 is :"+ x3);
                System.out.println("Defualt value of short x3 is 0");

                float x4=23.6f;
                System.out.println("Assigned value of float x4 is :"+ x4);
                System.out.println("Defualt value of float x4 is 0.0f");

                double x5=693.33d;
                System.out.println("Assigned value of double x5 is :"+ x5);
                System.out.println("Defualt value of double x5 is 0.0d");
```

```
        char x6='a';
        System.out.println("Assigned value of char x6 is :"+ x6);
        System.out.println("Defualt value of char x6 is \u0000");

        boolean x7=true,x8=false;
        System.out.println("Assigned value of boolean x7 and x8  is :"+x7  +x8);
        System.out.println("Defualt value of boolean is false");
    }   }
```

Output =



2. Write a program to convert an int value to double automatically and display both values.

Code :

```
class TypeConversion {
   public static void main(String[] args) {
      int intValue = 10;
      double doubleValue = intValue; // (Widening)

      System.out.println("Integer value: " + intValue);
      System.out.println("Converted double value: " + doubleValue);
   }
}
```

Output=

```
PS C:\Users\abhsh\OneDrive\Desktop\Java Assignment\java code> javac Assignment1-1.java
PS C:\Users\abhsh\OneDrive\Desktop\Java Assignment\java code> java TypeConversion
Integer value: 10
Converted double value: 10.0
PS C:\Users\abhsh\OneDrive\Desktop\Java Assignment\java code>
```

3. Write a program to convert a double value to int using typecasting and explain the data loss.

Code: -

```
class DoublInt{
      public static void main(String args[]){
      double num1 = 10.75;
      int num2 = (int) num1; // Typecasting with data loss
      System.out.println("double: " + num1);
      System.out.println("int: " + num2);
      System.out.println("Data loss: " + (num1 - num2)); }}
```

Output:-

```
PS C:\Users\abhsh\OneDrive\Desktop\Java Assignment\java code> javac Assignment1-1.java
PS C:\Users\abhsh\OneDrive\Desktop\Java Assignment\java code> java DoublInt
double: 10.75
int: 10
Data loss: 0.75
PS C:\Users\abhsh\OneDrive\Desktop\Java Assignment\java code>
```

4. Write a program to calculate the average of three int numbers using typecasting to display the result in double.

Code :- 
```
class Avg{
        public static void main(String args[]){
                int a=17,b=23,c=33;
                 double avg=a+b+c/3.0;
                System.out.println("Average of 3 number is :" +avg);
}}
```

Output:-

```
PS C:\Users\abhsh\OneDrive\Desktop\Java Assignment\java code> javac Assignment1-1.java
PS C:\Users\abhsh\OneDrive\Desktop\Java Assignment\java code> java Avg
Average of 3 number is :51.0
PS C:\Users\abhsh\OneDrive\Desktop\Java Assignment\java code>
```

5. Write a program to demonstrate binary, octal, hexadecimal, and floating-point literals in Java.

Code:- 
```
public static void main(String[] args) {
    int binary = 0b1010; // Binary literal
    int octal = 012;     // Octal literal
    int hex = 0xA;       // Hexadecimal literal
    double floatLit = 10.5; // Floating-point literal

    System.out.println("Binary: " + binary);
    System.out.println("Octal: " + octal);
    System.out.println("Hex: " + hex);
    System.out.println("Floating-point: " + floatLit);
  }
}
```

Output:-

```
PS C:\Users\abhsh\OneDrive\Desktop\Java Assignment\java code> javac Assignment1-1.java
PS C:\Users\abhsh\OneDrive\Desktop\Java Assignment\java code> java Literals
Binary: 10
Octal: 10
Hex: 10
Floating-point: 10.5
PS C:\Users\abhsh\OneDrive\Desktop\Java Assignment\java code>
```

6. Write a program to display character and string literals along with their ASCII values.

Code:-
```
class CharString {
   public static void main(String[] args) {
      char c = 'A';
      String s = "Hello";
      System.out.println("Character: " + c);
      System.out.println("ASCII Value: " + (int) c);
      System.out.println("String: " + s);
   }
}
```

Output:-

```
PS C:\Users\abhsh\OneDrive\Desktop\Java Assignment\java code> javac Assignment1-1.java
PS C:\Users\abhsh\OneDrive\Desktop\Java Assignment\java code> java CharString
Character: A
ASCII Value: 65
String: Hello
PS C:\Users\abhsh\OneDrive\Desktop\Java Assignment\java code>
```

7. Write a program that uses boolean literals to control program flow in an if-else statement.

Code:-
```
class BooleanDemo {
   public static void main(String[] args) {
      boolean isTrue = true;
      if (isTrue) {
         System.out.println("Condition is true.");
      } else {
         System.out.println("Condition is false.");
      }
   }
}
```

Output:-

```
PS C:\Users\abhsh\OneDrive\Desktop\Java Assignment\java code> javac Assignment1-1.java
PS C:\Users\abhsh\OneDrive\Desktop\Java Assignment\java code> java BooleanDemo
Condition is true.
PS C:\Users\abhsh\OneDrive\Desktop\Java Assignment\java code>
```

8. Write a program to perform addition, subtraction, multiplication, division, and modulus operations on two integer numbers and display the results.

Code:-

```
class ArithmeticOperations {
   public static void main(String[] args) {
      int a = 10, b = 3;
      System.out.println("Addition: " + (a + b));
      System.out.println("Subtraction: " + (a - b));
      System.out.println("Multiplication: " + (a * b));
      System.out.println("Division: " + (a / b));
      System.out.println("Modulus: " + (a % b));
   }
}
```

Output:-

```
PS C:\Users\abhsh\OneDrive\Desktop\Java Assignment\java code> javac Assignment1-1.java
PS C:\Users\abhsh\OneDrive\Desktop\Java Assignment\java code> java ArithmeticOperations
Addition: 13
Subtraction: 7
Multiplication: 30
Division: 3
Modulus: 1
PS C:\Users\abhsh\OneDrive\Desktop\Java Assignment\java code>
```

9. Write a program to perform addition, subtraction, multiplication, division, and modulus operations on two integer numbers and display the results.

Code:-

```
class RelationalOperators {
   public static void main(String[] args) {
      int a = 10, b = 20;
      System.out.println("a == b: " + (a == b));
      System.out.println("a != b: " + (a != b));
      System.out.println("a > b: " + (a > b));
      System.out.println("a < b: " + (a < b));
      System.out.println("a >= b: " + (a >= b));
```

```
        System.out.println("a <= b: " + (a <= b));
    }
}
```

Output:-

```
PS C:\Users\abhsh\OneDrive\Desktop\Java Assignment\java code> javac Assignment1-1.java
PS C:\Users\abhsh\OneDrive\Desktop\Java Assignment\java code> java RelationalOperators
a == b: false
a != b: true
a > b: false
a < b: true
a >= b: false
a <= b: true
PS C:\Users\abhsh\OneDrive\Desktop\Java Assignment\java code>
```

10. Write a program to compare two integers using all relational operators (==, !=, >, <, >=, <=) and display the results.

Code:- class RelationalOperatorsDemo {

```
    public static void main(String[] args) {
        int a = 10, b = 5; // Declare two integers

        System.out.println("Comparing a = " + a + " and b = " + b);

        // Using '==' (Equal to)
        System.out.println("a == b : " + (a == b));

        // Using '!=' (Not Equal to)
        System.out.println("a != b : " + (a != b));

        // Using '>' (Greater than)
        System.out.println("a > b  : " + (a > b));

        // Using '<' (Less than)
        System.out.println("a < b  : " + (a < b));
```

```
        // Using '>=' (Greater than or equal to)
        System.out.println("a >= b : " + (a >= b));

        // Using '<=' (Less than or equal to)
        System.out.println("a <= b : " + (a <= b));
    }
}
```

Output:-

11. Write a program to check if a number is positive and even using logical operators (&&, ||, !).

Code:-

```
class PositiveEven {
    public static void main(String[] args) {
        int num = 12;
        if (num > 0 && num % 2 == 0) {
            System.out.println(num + " is positive and even.");
        } else {
            System.out.println(num + " is not positive and even.");
        }
    }
}
```

```
PS C:\Users\abhsh\OneDrive\Desktop\Java Assignment\java code> javac Assignment1-1.java
PS C:\Users\abhsh\OneDrive\Desktop\Java Assignment\java code> java PositiveEven
12 is positive and even.
PS C:\Users\abhsh\OneDrive\Desktop\Java Assignment\java code>
```

12.Write a program to demonstrate the use of assignment operators (=, +=, -=, *=, /=, %=) on two integers.

Code:-

```
class AssignmentOperatorsDemo {
   public static void main(String[] args) {
      int a = 10, b = 5; // Declare two integers

      System.out.println("Initial values: a = " + a + ", b = " + b);
      int result = a;
      System.out.println("Using '=' operator: result = " + result);

      a += b; // Equivalent to: a = a + b
      System.out.println("Using '+=' operator: a = " + a);

      a -= b; // Equivalent to: a = a - b
      System.out.println("Using '-=' operator: a = " + a);
      a *= b;
      System.out.println("Using '*=' operator: a = " + a);
       a /= b;
      System.out.println("Using '/=' operator: a = " + a);
      a %= b;
      System.out.println("Using '%=' operator: a = " + a);
   }
}
```

```
PS C:\Users\abhsh\OneDrive\Desktop\Java Assignment\java code> javac Assignment1-1.java
PS C:\Users\abhsh\OneDrive\Desktop\Java Assignment\java code> java AssignmentOperatorsDemo
Initial values: a = 10, b = 5
Using '=' operator: result = 10
Using '+=' operator: a = 15
Using '-=' operator: a = 10
Using '*=' operator: a = 50
Using '/=' operator: a = 10
Using '%=' operator: a = 0
PS C:\Users\abhsh\OneDrive\Desktop\Java Assignment\java code>
```